

10th Class 2020		
Chemistry	Group-II	Paper-II
Time: 1.45 Hours	(Subjective Type)	Marks: 48

(Part-I)

2. Write short answers to any FIVE (5) questions: (10)

(i) What are reversible reactions? Give example.

**Ans** A reaction in which the products can recombine to form reactants are called reversible reaction. These reactions never go to completion. These are represented by a double arrow ( $\rightleftharpoons$ ) between reactants and products.

(ii) What does large value of  $K_c$  show?

**Ans** The large value of  $K_c$  indicates that at equilibrium position the reaction mixture consists of almost all products and reactants are negligible. The reaction has almost gone to completion.

(iii) Write the equilibrium constant expression for the given reaction:



**Ans**



The equilibrium constant  $K_c$  is 0.211.

(iv) What is the extent of reaction?

**Ans** Numerical value of the equilibrium constant predicts the extent of a reaction. It indicates to which extent reactants are converted to products. In fact, it measures how far a reaction proceeds before establishing equilibrium state.

(v) Give the name of two acids prepared by Jabir bin Hayan.

**Ans** Jabir bin Hayan prepared Hydrochloric acid (HCl) and Sulphuric acid ( $\text{H}_2\text{SO}_4$ ).

(vi) Write the conjugate acids of  $\text{CH}_3\text{COOH}$  and  $\text{CH}_3\text{NH}_2$ .

**Ans** The conjugate acid of  $\text{CH}_3\text{COOH}$  is  $\text{H}_3\text{O}^+$  and that of  $\text{CH}_3\text{NH}_2$  is  $\text{CH}_3\text{NH}_3^+$ .

(vii) Define water of crystallization with example.

**Ans** Most of the salts contain water of crystallization which is responsible for the shape of the crystals. Number of molecules of water are specific for each salt and they are written with the chemical formula of a salt.

For example:

Copper Sulphate  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

(viii) Give any two uses of  $\text{Mg}(\text{OH})_2$ .

**Ans** Following are the two uses of  $\text{Mg}(\text{OH})_2$ :

1. Magnesium hydroxide is used as a base to neutralize acidity in the stomach.
2. It is also used for the treatment of bee's stings.

**3. Write short answers to any FIVE (5) questions: (10)**

(i) Define petroleum.

**Ans** Petroleum is a dark brownish or greenish-black coloured viscous liquid. It is a complex mixture of several solid, liquid or gaseous hydrocarbons in water mixed with salts and earth particles.

(ii) How an alcohol is tested?

**Ans** Sodium metal test:

Take about  $2-3 \text{ cm}^3$  of the given organic liquid in a dry test tube and add a piece of sodium metal.

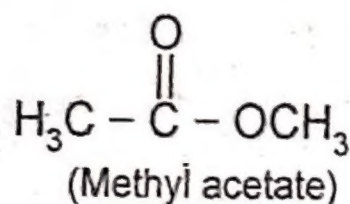
**Result:** Hydrogen gas will evolve.

(iii) What is an ester group? Give an example of ester.

**Ans** Organic compound consisting of  $\text{RCOOR}'$  functional

group are called esters. Their general formula is  $\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OR}'$ ; where R and R' are alkyl group.

**Example:**

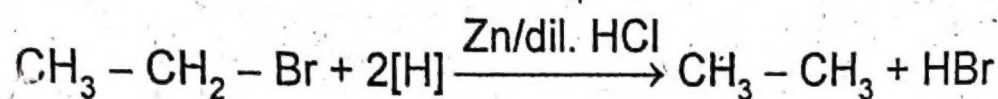
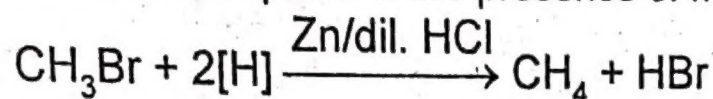


(iv) **Why alkanes are called paraffins?**

**Ans** The simplest hydrocarbons are alkanes. In these compounds, all the bonds of carbon atoms are single that means valencies carbon atoms are saturated. Therefore, they are least reactive. That is the reason, alkanes are called paraffins.

(v) **How alkyl halides are reduced?**

**Ans** Reduction means addition of nascent hydrogen. In fact, it is a replacement of a halogen atom with a hydrogen atom. This reaction takes place in the presence of metal and HCl.



(vi) **What are polysaccharides? Give an example.**

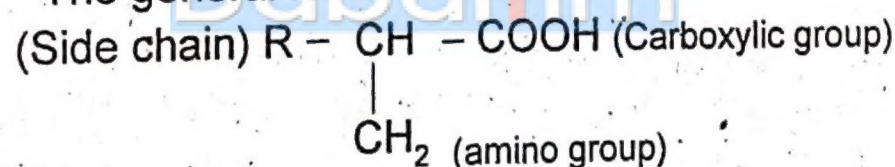
**Ans** The carbohydrates consisting hundreds to thousands of monosaccharides are called as polysaccharides, e.g., starch, cellulose, etc.

(vii) **What are fat soluble vitamins?**

**Ans** Fat-soluble vitamins are A, D, E and K.

(viii) **Give general formula of amino acid.**

**Ans** The general formula of amino acid is:



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4. **Write short answers to any FIVE (5) questions: (10)**

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(i) **Why is the temperature of upper stratosphere is higher?**

**Ans** In upper stratosphere, the presence of ozone (due to absorption of radiation) is responsible for the rise of temperature gradually up to 2°C.

(ii) **Point out two serious effects of ozone depletion.**

**Ans** The two serious effects of ozone depletion are:

1. The decreased ozone layer will increase infectious diseases like malaria.

2. It can change the life cycle of plants disrupting the food chain.

(iii) Write down the name of four primary pollutants.

**Ans** The name of four primary pollutants are:

1. Oxides of Sulphur ( $\text{SO}_2$  and  $\text{SO}_3$ )
2. Oxides of Carbon ( $\text{CO}_2$  and  $\text{CO}$ )
3. Oxides of Nitrogen
4. Hydrocarbons ( $\text{CH}_4$ )

(iv) What do you mean by boiler scales? How are they removed?

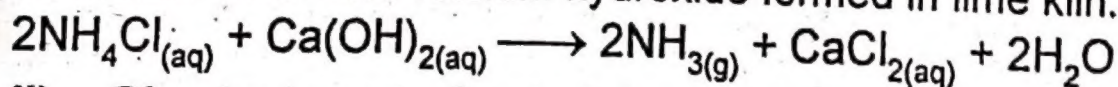
**Ans** Hard water is unfit for use in steam engines, boilers and turbines because insoluble calcium and magnesium salts deposit inside. They are called scales. They are bad conductors of heat and hence more fuel is used. Insoluble calcium and magnesium sulphates not only reduce the efficiency of the engine but also cause the boiler to burst.

(v) What do you mean by chlorination?

**Ans** Swimming pools are cleaned by chlorination process. It is the addition of chlorine solution in swimming pools. Chlorine kills bacteria and other microorganisms.  $\text{Cl}_2$  itself does not kill rather it dissociates in water to form hydrochlorous acid ( $\text{HOCl}$ ) and hydrochloric acid ( $\text{HCl}$ ).

(vi) How is ammonia recovered from the Solvay's process?

**Ans** Ammonia is recovered in the carbonating tower from ammonium chloride solution produced in the carbonated tower and calcium hydroxide formed in lime kiln.



(vii) Give two uses of petroleum ether.

**Ans** Following are the two uses of petroleum ether:

1. It uses as laboratory solvent.
2. It uses for dry cleaning purposes.

(viii) Write a short note on smelting.

**Ans** Smelting is the further heating of roasted ore with sand flux and coke in the presence of excess of air in a

blast furnace. It is highly exothermic process, therefore, a small amount of coke is required in the process.

### (Part-II)

NOTE: Attempt any TWO (2) questions.

Q.5.(a) What is the importance of equilibrium constant? (5)

**Ans** For Answer see Paper 2017 (Group-II), Q.5.(a).

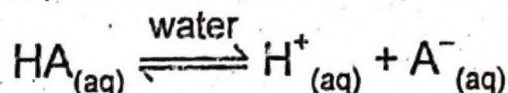
(b) Describe Arrhenius concept of acids and bases, with example. (4)

**Ans** Arrhenius Concept of Acids and Bases:

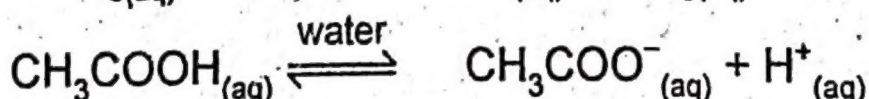
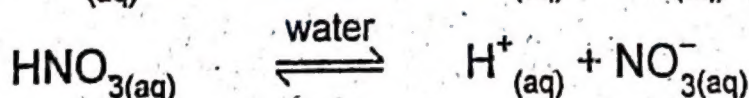
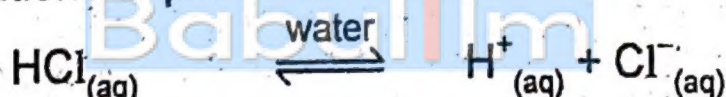
According to Arrhenius concept:

**Acid** is a substance which dissociates in aqueous solution to give hydrogen ions.

In general, the ionization of acids take place as follows:

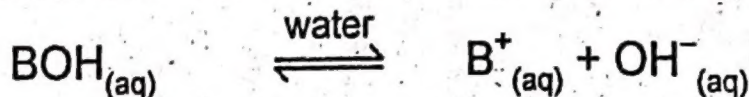


For example, substances such as HCl, HNO<sub>3</sub>, CH<sub>3</sub>COOH, HCN, etc. are acids because they ionize in aqueous solutions to provide H<sup>+</sup> ions.

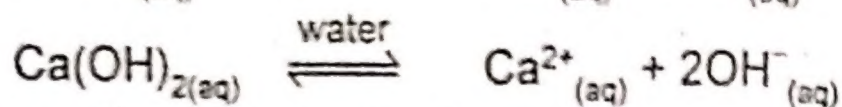
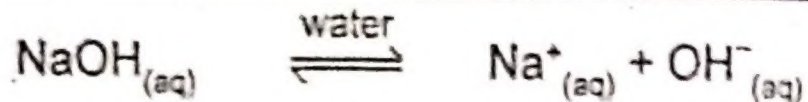


**Base** is a substance which dissociates in aqueous solution to give hydroxide ions.

The general ionization of bases take place as follows:



The substances such as NaOH, KOH, NH<sub>4</sub>OH, Ca(OH)<sub>2</sub>, etc. are bases because these compounds ionize in aqueous solutions to provide OH<sup>-</sup> ions.



Thus, according to Arrhenius Concept:

Acids give  $\text{H}^+$  ions in water, bases give  $\text{OH}^-$  ions in water.

**Q.6.(a) Write five physical properties of alkenes. (5)**

**Ans** For Answer see Paper 2018 (Group-I), Q.6.(a).

**(b) Write any four uses of carbohydrates. (4)**

**Ans** Following are the four uses of carbohydrates:

1. Carbohydrates regulate the amount of sugar level in our body. Low sugar level in body results in hypoglycemia.
2. Carbohydrates provide essential nutrients for bacteria in intestinal tract that helps in digestion.
3. Dietary fibres help to keep the bowl functioning properly.
4. Carbohydrates protect our muscles from cramping.

**Q.7.(a) Explain urea manufacturing process. (5)**

**Ans** For Answer see Paper 2017 (Group-I), Q.7.(a).

**(b) Describe any four effects of water pollution. (4)**

**Ans** Following are four effects of water pollution:

- (i) It is hazardous to human health. Drinking polluted water can cause cholera, typhoid and diarrhoea.
- (ii) The use of polluted water is not only devastating for people but also for animals and birds.
- (iii) It causes rapid growth of algae. Death and decomposition of algae causes deficiency of oxygen in water that affects organism living in water.
- (iv) It is damaging aquatic life, thus breaking a link in food chain.